REMARKS

The Office Action of September 24, 2007, presents the examination of claims 1-4, 12-14, 18-24. 28, 34-36 and 46-48, the remaining being withdrawn pursuant to a Restriction Requirement.

A housekeeping matter

The present paper is accompanied by a Power of Attorney and Change of Correspondence Address, shifting correspondence in this matter to the firm of Birch, Stewart, Kolasch & Birch, LLP. The Examiner's cooperation in ensuring that further correspondence is sent to BSKB would be appreciated.

Amendments to the claims

Claim 1 is presently amended to incorporate the recitations of claim 2. Claims 2 and 3 are accordingly canceled. The corresponding claims 34, 49-51, 53 and 54 are also canceled.

Restriction requirement

Claims 5-11, 15-17, 25-27, 32-33, 37-45 and 52 and 55-65 stand withdrawn pursuant to restriction. The claims as currently amended all recite as a feature of the invention a polynucleotide that encodes the genome or antigenome of a chimeric RSV, including human and bovine or mouse RSV nucleic acid sequences, that further includes one or more mutations from among the group of mutations included in a set of mutant RSV. In the instances of claims to the virus embodiments, the polynucleotide is the genome or antigenome of the virus. Applicants submit that the claims thus represent a unitary invention within the presently elected restriction group and that there is no undue burden of search imposed by examination of all of the presently pending claims, and therefore the instant restriction requirement should be withdrawn.

Pending method claims all are commensurate in scope with these composition claims, and Applicants submit that they could thus be rejoined upon a finding of allowability of the composition claims. MPEP § 821.04.

The Examiner did not respond to Applicants' argument on this point in the Final Office Action, and so Applicants request that the status of the restriction requirement be clarified in the next communication from the Office.

Rejections over prior art

Claims 1, 4, 12, 18, 21-24, 35, 36 and 46-48 stand rejected under 35 USC § 103(a) as being unpatentable over Clarke '520 in view of Collins (PNAS vol. 92) and further in view of Murphy '326. This rejection is traversed. Reconsideration and withdrawal thereof are respectfully requested.

Applicants submit that the Examiner fails to establish *prima facie* obviousness of the present invention. In particular, the Examiner is using impermissible hindsight to assemble the present invention from elements of the prior art, using the Applicants disclosure as a template. Such an approach to asserting a case of *prima facie* obviousness is improper and cannot be sustained. *See, e.g. In re Fritch,* 23 USPQ2d 1780 (Fed. Cir. 1992). Furthermore, an expectation of success in accomplishing the modification suggested by the Examiner must be present at the time the invention was made. *In re Vaeck*, 20 USPQ2d 1438 (Fed. Cir. 1991).

Murphy '326 is cited for disclosure of the particular mutant strains recited in claim 13. However, Murphy '326 does not disclose the nucleotide sequence of any of the mutant viruses, and in particular does not provide any description of the particular changes in nucleotide sequence that are to be made in order to introduce the various attenuating point mutations harbored by, for example RSV cpts 248, into a different virus, i.e. one having a chimeric genome or antigenome. That information is critical to implementing the invention of the present application and is provided by the present specification.

Neither Clarke '520 nor Collins (PNAS vol. 92) supply this information. Thus, the combined references cited by the Examiner do not disclose or suggest the present invention and so the instant rejection fails and must be withdrawn.

The Examiner's reasons for maintaining the rejection in the first instance relate to an idea that, given alleged teachings of Clark '520 that one can insert or replace portions of one RSV genome with portions of another, one could simply insert the heterologous genome segments

desired into the existing viruses of Murphy '326 that include the various mutations described in that patent to obtain the instantly claimed invention. Therefore, the Examiner alleges, Applicants' argument is not persuasive because the precise sequence of the point mutations in the panel of viruses recited in the instant claim 1 need not be known.

This argument is spurious in the first instance, as without knowledge of the particular sequence and location of a mutation, one of skill in the art could not have any reasonable expectation of success in moving a sequence from the bovine or mouse RSV genome into the human RSV genome including the point mutation with retention of the attenuation phenotype. That is, upon moving the heterologous sequence into the human RSV genome, the attenuating mutation may be taken out by the replacement process. Alternatively, the mutation could well abolish a restriction site that is required for the moving process, or generate a new one that would result in failure to properly reassemble the recombinant viral genome.

The Examiner does acknowledge that his argument does not apply to the previously amended claim 2, and thus should not apply to the presently amended claim 1, which incorporates the features of claim 2, now canceled.

Claims 1, 2, 4, 12, 18, 21-24, 34-36 and 46-48 are rejected under 35 USC § 103(a) as being unpatentable over Clarke and Collins as applied above, in further view of Wertz. This rejection is traversed. Reconsideration and withdrawal thereof are requested.

Applicants submit that the Examiner fails to establish *prima facie* obviousness of the invention as claimed for the reasons explained above. The Examiner has in this instance acknowledged that Applicants' previous arguments for patentability were persuasive as to amended claim 3, as he has removed this claim from the rejection (see paragraph 11 of the Final Office Action at page 5). Applicants are not certain why claim 2 would not also be removed from this rejection, as certainly human-bovine chimeras are as distinct from the references as human-human chimeras are.

More to the point, Wertz '229 does not at all describe any sort of functional recombinant RSV genome or antigenome that provides a replicating viral particle. Rather, Wertz '229 describes expression of RSV proteins from "minigenome" plasmids comprising a 3' leader and

5' trailer of RSV and having deletion of most of the "internal" genes of the virus. The replication of the minigenome plasmids having a mutation in the trailer region ("panhandle") or wild-type trailer region was assessed in the presence of plasmids expressing the N, P and L proteins of RSV. By such an experiment, Wertz determined that a sequence in the trailer region and the L protein are both necessary for efficient replication of the RSV genome.

Thus, Wertz '229 adds nothing to the combination of Clarke, Collins and Murphy that cures the deficiencies of the combination of these references in failing to render obvious the presently-claimed invention.

Obviousness-type double patenting rejections

The Examiner has pronounced a "new warning" about double patenting related to identity of claims 3 and 34. Both of these claims are canceled, rendering the new warning moot.

Claims 1, 4, 12, 14, 18-24, 28, 35 and 46-48 remain rejected under the judicially created doctrine of obviousness-type double patenting over claims 1-4, 12, 14, 18, 20-25, 28 and 31-34 of US Patent 6,689,367.

Applicants reiterate that the subject matter of this application that is deemed obvious over the claims of the 6,689,367 patent was restricted from the application that became that patent and so a double-patenting rejection is improper in this instance. Applicants provide attached hereto a copy of the restriction requirement made during prosecution of the '367 patent. The Examiner should take due note that the patented subject matter in the '367 patent relates to Group I, whereas the subject matter of the present application is in Group X.

As the USPTO has already made a determination that the subject matter claimed in the '367 patent and the present subject matter are patentably distinct inventions, the instant rejection should be withdrawn.

CONCLUSION

In view of the above amendments and remarks, Applicants submit that the present claims are allowable.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Mark J. Nuell, Ph.D. Reg. No. 36,623 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

Dated: October 31, 2007

Respectfully submitted,

By /mjn/
Mark J. Nuell
Registration No.: 36,623
BIRCH, STEWART, KOLASCH & BIRCH, LLP
12770 High Bluff Drive
Suite 260
San Diego, California 92130
(858) 792-8855
Attorney for Applicants

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

VB

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TOWNSEND AND TOWNSEND AND CREW LLP
TWO EMBARCADERO CENTER
EIGHTH FLOOR
SAN FRANCISCO CA 94111

EXAMINER	
BRUMBACK, B	
ART UNIT	**PAPER NUMBER**
1642	6

DATE MAILED: 06/07/00

COPY

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/291,894	Collins et al.
Examiner	**Group Art Unit**
Brenda Brumback	1642

☐ Responsive to communication(s) filed on _____.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *1* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-65* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☐ Claim(s) _____ is/are rejected.

☐ Claim(s) _____ is/are objected to.

☒ Claims *1-65* are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

DETAILED ACTION

Election/Restriction

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-3, 6-10, 21, 35, and 46-51 drawn to chimeric human RSV comprising RSV A combined with human RSV B, classified in class 424, subclass 199.1 or 211.1.

II. Claims 1, 4, 5, and 11, drawn to chimeric RSV wherein the heterologous gene is selected from NS1, NS2, N, P, M, SH, M1(ORF1), M2(ORF2), L, F, and G, classified in 424, subclass 199.1 or 211.1.

III. Claims 1, 12, 13, 18-20, and 22, drawn to chimeric RSV further modified by attenuating mutations present within a panel of biologically derived mutant RSV strains, classified in class, 424 subclass 199.1 or 211.1.

IV. Claims 1, 12, 14, 20, and 22, drawn to chimeric RSV incorporating temperature sensitive mutations, classified in class 424, subclass 199.1 or 211.1.

V. Claims 1, 12, 15, 20, and 22, drawn to chimeric RSV incorporating mutations from cold-passaged attenuated RSV, classified in class 424, subclass 199.1 or 211.1.

VI. Claims 1, 16, 17, 20, and 22, drawn to chimeric RSV comprising substituted F and G genes and further modified to incorporate attenuating point mutations, classified in class 424, subclass 199.1 or 211.1.

VII. Claims 1 and 22-24, drawn to chimeric RSV further comprising a nucleotide modification specifying a phenotypic change, wherein a SH, NS1, NS2, M2ORF2, or G gene is deleted, classified in class 424, subclass 199.1 or 211.1.

VIII. Claims 1, 22, and 25-29, drawn to chimeric RSV further comprising a deletion, insertion, substitution or rearrangement of a cis-acting regulatory sequence, classified in class 424, subclass 199.1 or 211.1.

IX. Claims 1, 22, and 30-33, drawn to chimeric RSV incorporating a non-RSV gene, classified in class 424, subclass 199.1 or 211.1.

X. Claims 1 and 34, drawn to chimeric RSV comprising human RSV combined with bovine or murine RSV, classified in class 424, subclass 199.1 or 211.1.

XI. Claims 1 and 36, drawn to chimeric RSV which is a subviral particle, classified in class 424, subclass 199.1 or 211.1.

XII. Claims 1 and 37-45, drawn to methods of stimulating the immune system, classified in class 424, subclass 199.1 or 211.1.

XIII. Claims 52- 55 drawn to an isolated polynucleotide molecule comprising a chimeric RSV genome combined with a heterologous gene, wherein the heterologous gene

encodes a RSV F, G, or SH glycoprotein, classified in class 424, subclass 199.1 or 211.1.

XIV. Claims 52, and 56-60, drawn to an isolated polynucleotide molecule comprising a chimeric RSV genome of subgroup A combined with a heterologous gene from subgroup B, classified in class 424, subclass 199.1 or 211.1.

XV. Claims 52 and 61-63, drawn to an isolated polynucleotide molecule comprising a chimeric RSV genome and further comprising a nucleotide modification specifying a phenotypic change, classified in class 424, subclass 199.1 or 211.1.

XVI. Claims 64 and 65, drawn to methods for producing an infectious attenuated chimeric RSV, classified in class 424, subclass 199.1 or 211.1.

2. The inventions are distinct, each from the other because of the following reasons:

The products of groups I-XI, and XIII-XV have different structures and different immunological properties.

Inventions I and XII are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the chimeric RSV of Group I can be used in the materially different processes of diagnostic testing and affinity purification of antibodies.

The methods of Groups XII and XVI have different method steps and are for different purposes.

It is noted that certain of the claims appear in multiple groups. Claims which appear in more than one group will be examined with the elected group to the extent that they read on that group.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

4. Due to the complexity of the claims, the restriction requirement is in writing. Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brenda Brumback whose telephone number is (703) 306-3220. If the examiner can not be reached, inquiries can be directed to Supervisory Patent Examiner Anthony Caputa whose telephone number is (703) 308-3995. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0196. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Examiner Brenda Brumback, Art Unit 1642 and should be marked "OFFICIAL" for entry into prosecution history or "DRAFT" for consideration by the examiner without entry. The Art Unit 1642 FAX telephone number is (703)-305-3014. FAX machines will be available to receive transmissions 24 hours a day. In compliance with 1096 OG 30, the filing date accorded to each OFFICIAL fax transmission will be determined by the FAX machine's stamped date found on the last page of the transmission, unless that date is a Saturday, Sunday or Federal Holiday with the District of Columbia, in which case the OFFICIAL date of receipt will be the next business day.

BB
June 5, 2000

Brenda Brumback
Brenda Brumback,
Patent Examiner